REMARKS/ARGUMENTS

Claims 27-30 and 33-42 were pending in the present application. The present response amends claims 27-30; and adds claims 43-46; leaving pending in the application claims 27-30 and 33-46. Reconsideration of the rejected claims and consideration of the newly presented claims is respectfully requested.

I. Rejection under 35 U.S.C. §112

Claims 27, 28, 33-38, and 39-42 are rejected under 35 U.S.C. §112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Particularly, claims 27, 28, and 33-42 are objected to as being indefinite for failing to set out the specific order in which the birefringent plates are disposed.

Applicants respectfully submit that there are only six permutations of each ratio (e.g., 1:3:9, 1:9:3, 3:1:9, 3:9:1, 9:1:3, 9:3:1 for the 1:3:9 ratio), and that any of these permutations can be used in accordance with embodiments of the present invention. For example, in paragraph [0087] of the published application, it is stated that the "order of the depolarizer plate thicknesses" can be chosen such that "one or more of the lowest retardance frequencies can be made to vanish in the first quadrant." Further, for "both the 1:3:9 and 4:3:9" ratios, there are "several orderings for which the two lowest frequencies vanish." For instance, in one example of a 4:3:9 permutation "the thickest plate is in the middle" and "the thinnest plate is furthest from the wafer" (paragraph [0087]). The claims as originally filed also recited thicknesses in a permutation of the "ratios of 1:3:9" and "3:4:9" (claims 27 and 28). In order to clarify what is required by each claim, these claims have been amended to recite thicknesses of the plates "in the ratio of 1:3:9 or a permutation thereof" or "in the ratio of 4:3:9 or a permutation thereof" to more closely match the claims as originally filed. Applicants respectfully submit that these claims are not ambiguous as to the ordering and/or ratios of the thicknesses of the plates and are fully supported by the original disclosure.

With regard to claims 29 and 30, the claims are rejected as lacking proper antecedent basis for the term "angle." Although Applicants do not necessarily agree with the rejection, claims 29 and 30 have been amended and should provide proper antecedent basis for each term recited therein.

Applicants therefore respectfully request that the rejection with respect to claims 27-30, 33-34, 37-38, and 39-42 be withdrawn.

II. Rejection under 35 U.S.C. §102

Claim 30 is rejected under 35 U.S.C. §102(b) as being anticipated by *Hakimi* (US 5,432,637. Claim 30 as amended requires in part "a first angle between polarization axes of a first adjacent pair of the plates is substantially $\left(n+\frac{1}{2}\right)\frac{\pi}{2}$, and a second angle between polarization axes of a second adjacent pair of the plates is substantially $n\frac{\pi}{2} \pm \arccos(-1/3)/4$, where n is an integer." Such limitations are not disclosed by *Hakimi*, as *Hakimi* does not disclose the use of different angles between polarization axes of adjacent pairs, but instead only discloses "the angle between polarization axes of consecutive said plates" to be "approximately 45 degrees" (col. 3, lines 39-52). Further, the *Hakimi* does not disclose such polarization equations, and the 45° angle of *Hakimi* does not provide a solution for both polarization equations. As such, *Hakimi* cannot anticipate claim 30. Applicants therefore respectfully request that the rejection with respect to claim 30 be withdrawn.

III. Rejection under 35 U.S.C. §103

Claims 27-29 and 33-42 are rejected under 35 U.S.C. §103(a) as being obvious over *Hakimi*.

Claim 27

With regard to claim 27, Applicants' claim 27 requires that the "thicknesses of the plates are in the ratio of 1:3:9 or a permutation thereof." Such a limitation is neither taught nor suggested by *Hakimi*. *Hakimi* teaches only that the "length" of the plates should be selected "so that the polarization mode delays in the birefringent elements exceed the coherence time of the light," such that a "minimum length of 40mm quartz crystal is required for all said birefringent plates to destroy the phase coherence of the input light" (col. 4, lines 18-32). *Hakimi* does not disclose any ratio of thicknesses. While *Hakimi* does show plates of differing thickness in Fig. 1, the ratio of those thicknesses is not disclosed. The disclosure in *Hakimi* of only a 45° angle

between plates is similar to a Lyot depolarizer which, as discussed in the background of the present application, utilizes thicknesses of 1:2 between adjacent plates if the plates are made of the same material (p. 6, lines 27-29). *Hakimi* therefore does not teach or suggest the ratio of 1:3:9, or a permutation thereof, as required by claim 27.

Further, it would not have been simply a result of routine experimentation to discover such a ratio. The polarizer of *Hakimi* is directed for use in a telecommunications system, particularly with a trunk network (col. 1, lines 7-9). The polarizer described in the Applicants' application can be used with optical metrology equipment (p. 1, lines 17-20), which utilizes different wavelengths of light and presents a different set of problems. One of the advantages of the 1:3:9 ratio (or permutation thereof) required by claim 27 is that this ratio "yields the highest fundamental frequency" for a given combined thickness, and for several orderings "the two lowest frequencies vanish" (p. 30, lines 2-30). There would have been no corresponding motivation to alter the ratios in *Hakimi*, as *Hakimi* simply placed a minimum length (40mm) on the plates, which itself functions to increase the minimum frequency (p. 30, lines 2-3). This solution may not be acceptable for applications such as optical metrology, however, as thicker plates can lead to problems such as "excessive UV absorption" (p. 31, lines 4-10). There is no indication in *Hakimi* that any resulting absorption is a problem for telecommunications systems. As such, there would be no motivation to alter the ratios of the plates in *Hakimi* to those required by claim 27.

Further, *Hakimi* does not teach or suggest that the plates can have a non-increasing order, as the only disclosure relating to differing thickness in *Hakimi* is that of Fig. 1, showing the thickness of the plates increasing from one side of the depolarizer to the other. There is no teaching or suggestion in *Hakimi* that the middle plate can be thinner than one of the outer plates. For example, the ratio 4:3:9 recited in claim 28 and discussed above has the advantage that it still increases the minimum frequency without simply increasing the thickness of each plate, while making the "thinnest plate" thicker and "easier to fabricate" (p. 30, lines 11-13). As discussed above with respect to claim 27, there would have been no motivation to change the ratios of the plates in order to avoid problems such as UV absorption. As such, claims 27 and 28 and dependent claims 33, 34, 37, and 38 are not rendered obvious.

Claims 29 and 30

Claims 29 and 30 require in part that a polarization angle between two of the plates be "substantially $n\frac{\pi}{2} \pm \arccos(-1/3)/4$, where n is an integer." *Hakimi* does not teach or suggest such a polarization angle. *Hakimi* only discloses an angle between plate polarizations of 45°, which is not a solution to the required formula. Further, a major advantage of the angle required by claim 29 is that choosing such an angle can eliminate the dependence of the signal measurement on the rotation angle of the sample being measured, as well as the polarization properties of the sample being measured in an optical metrology application (p. 27, line 17-p. 28, line 20). There is no indication that such a result would be advantageous for the telecommunications applications of *Hakimi*, such that there would have been no motivation in *Hakimi* to adjust the angle to such a value. As such, claims 29 and 30, as well as dependent claims 39-42, should not be rendered obvious by *Hakimi*.

Applicants therefore respectfully request that the rejection with respect to claims 27-29 33-34, and 37-42 be withdrawn.

IV. Amendment to the Claims

Unless otherwise specified, amendments to the claims are made for purposes of clarity, and are not intended to alter the scope of the claims or limit any equivalents thereof. The amendments are supported by the specification and do not add new matter to the specification.

V. Newly Presented Claims

Claims 43-46 have been added to cover different aspects of the present invention. These claims are supported by the specification and do not add new matter. The thicknesses recited in these claims are not rendered obvious by *Hakimi*, as *Hakimi* discloses only a minimum thickness of each plate of 40mm, as discussed above. The increased thickness of *Hakimi* may be acceptable for telecommunications applications as discussed in Hakimi, but may prove to be disadvantageous for optical metrology applications for reasons including those discussed above. Applicants therefore respectfully request consideration of newly presented claims 43-44.

VI. Conclusion

In view of the above, it is respectfully submitted that the application is now in condition for allowance. Reconsideration of the pending claims and a notice of allowance is respectfully requested.

The Commissioner is hereby authorized to charge any deficiency in the fees filed, asserted to be filed, or which should have been filed herewith (or with any paper hereafter filed in this application by this firm) to our Deposit Account No. 50-1703, under Order No. TWI-30900. **A duplicate copy of the transmittal cover sheet attached to this Response to Office Action Mailed November 2, 2004, is provided herewith.**

Respectfully submitted,

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